



## SEQUENCE LISTING

<110> Schneider, Michael  
Oh, Hidemasa

<120> Modulators of Telomere Stability

<130> HO-P02673US1

<140> US 10/820,583

<141> 2004-04-08

<150> US 60/461,095

<151> 2003-04-08

<160> 24

<170> PatentIn version 3.1

<210> 1

<211> 500

<212> PRT

<213> Human

<400> 1

Met Ala Gly Gly Gly Gly Ser Ser Asp Gly Ser Gly Arg Ala Ala Gly  
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Arg Arg Ala Ser Arg Ser Ser Gly Arg Ala Arg Arg Gly Arg His Glu  
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Pro Gly Leu Gly Gly Pro Ala Glu Arg Gly Ala Gly Glu Ala Arg Leu  
35 40 45

Glu Glu Ala Val Asn Arg Trp Val Leu Lys Phe Tyr Phe His Glu Ala  
50 55 60

Leu Arg Ala Phe Arg Gly Ser Arg Tyr Gly Asp Phe Arg Gln Ile Arg  
65 70 75 80

Asp Ile Met Gln Ala Leu Leu Val Arg Pro Leu Gly Lys Glu His Thr  
85 90 95

Val Ser Arg Leu Leu Arg Val Met Gln Cys Leu Ser Arg Ile Glu Glu  
100 105 110

Gly Glu Asn Leu Asp Cys Ser Phe Asp Met Glu Ala Glu Leu Thr Pro  
115 120 125

Leu Glu Ser Ala Ile Asn Val Leu Glu Met Ile Lys Thr Glu Phe Thr  
130 135 140

Leu Thr Glu Ala Val Val Glu Ser Ser Arg Lys Leu Val Lys Glu Ala  
 145 150 155 160

Ala Val Ile Ile Cys Ile Lys Asn Lys Glu Phe Glu Lys Ala Ser Lys  
 165 170 175

Ile Leu Lys Lys His Met Ser Lys Asp Pro Thr Thr Gln Lys Leu Arg  
 180 185 190

Asn Asp Leu Leu Asn Ile Ile Arg Glu Lys Asn Leu Ala His Pro Val  
 195 200 205

Ile Gln Asn Phe Ser Tyr Glu Thr Phe Gln Gln Lys Met Leu Arg Phe  
 210 215 220

Leu Glu Ser His Leu Asp Asp Ala Glu Pro Tyr Leu Leu Thr Met Ala  
 225 230 235 240

Lys Lys Ala Leu Lys Ser Glu Ser Ala Ala Ser Ser Thr Gly Lys Glu  
 245 250 255

Asp Lys Gln Pro Ala Pro Gly Pro Val Glu Lys Pro Pro Arg Glu Pro  
 260 265 270

Ala Arg Gln Leu Arg Asn Pro Pro Thr Thr Ile Gly Met Met Thr Leu  
 275 280 285

Lys Ala Ala Phe Lys Thr Leu Ser Gly Ala Gln Asp Ser Glu Ala Ala  
 290 295 300

Phe Ala Lys Leu Asp Gln Lys Asp Leu Val Leu Pro Thr Gln Ala Leu  
 305 310 315 320

Pro Ala Ser Pro Ala Leu Lys Asn Lys Arg Pro Arg Lys Asp Glu Asn  
 325 330 335

Glu Ser Ser Ala Pro Ala Asp Gly Glu Gly Gly Ser Glu Leu Gln Pro  
 340 345 350

Lys Asn Lys Arg Met Thr Ile Ser Arg Leu Val Leu Glu Glu Asp Ser  
 355 360 365

Gln Ser Thr Glu Pro Ser Ala Gly Leu Asn Ser Ser Gln Glu Ala Ala  
 370 375 380

Ser Ala Pro Pro Ser Lys Pro Thr Val Leu Asn Gln Pro Leu Pro Gly  
 385 390 395 400

Glu Lys Asn Pro Lys Val Pro Lys Gly Lys Trp Asn Ser Ser Asn Gly  
 405 410 415

Val Glu Glu Lys Glu Thr Trp Val Glu Glu Asp Glu Leu Phe Gln Val  
 420 425 430

Gln Ala Ala Pro Asp Glu Asp Ser Thr Thr Asn Ile Thr Lys Lys Gln  
 435 440 445

Lys Trp Thr Val Glu Glu Ser Glu Trp Val Lys Ala Gly Val Gln Lys  
 450 455 460

Tyr Gly Glu Gly Asn Trp Ala Ala Ile Ser Lys Asn Tyr Pro Phe Val  
 465 470 475 480

Asn Arg Thr Ala Val Met Ile Lys Asp Arg Trp Arg Thr Met Lys Arg  
 485 490 495

Leu Gly Met Asn  
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Ala Cys Ser Gln Pro His Gly Ser Val Thr Gln Ser Gln Gly Ser Ser  
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Ser Gln Ser Gln Gly Ile Ser Ser Ser Thr Ser Thr Met Pro Asn  
 35 40 45

Ser Ser Gln Ser Ser His Ser Ser Ser Gly Thr Leu Ser Ser Leu Glu  
 50 55 60

Thr Val Ser Thr Gln Glu Leu Tyr Ser Ile Pro Glu Asp Gln Glu Pro  
 65 70 75 80

Glu Asp Gln Glu Pro Glu Glu Pro Thr Pro Ala Pro Trp Ala Arg Leu  
 85 90 95

Trp Ala Leu Gln Asp Gly Phe Ala Asn Leu Glu Cys Val Asn Asp Asn  
100 105 110

Tyr Trp Phe Gly Arg Asp Lys Ser Cys Glu Tyr Cys Phe Asp Glu Pro  
115 120 125

Leu Leu Lys Arg Thr Asp Lys Tyr Arg Thr Tyr Ser Lys Lys His Phe  
130 135 140

Arg Ile Phe Arg Glu Val Gly Pro Lys Asn Ser Tyr Ile Ala Tyr Ile  
145 150 155 160

Glu Asp His Ser Gly Asn Gly Thr Phe Val Asn Thr Glu Leu Val Gly  
165 170 175

Lys Gly Lys Arg Arg Pro Leu Asn Asn Asn Ser Glu Ile Ala Leu Ser  
180 185 190

Leu Ser Arg Asn Lys Val Phe Val Phe Phe Asp Leu Thr Val Asp Asp  
195 200 205

Gln Ser Val Tyr Pro Lys Ala Leu Arg Asp Glu Tyr Ile Met Ser Lys  
210 215 220

Thr Leu Gly Ser Gly Ala Cys Gly Glu Val Lys Leu Ala Phe Glu Arg  
225 230 235 240

Lys Thr Cys Lys Lys Val Ala Ile Lys Ile Ile Ser Lys Arg Lys Phe  
245 250 255

Ala Ile Gly Ser Ala Arg Glu Ala Asp Pro Ala Leu Asn Val Glu Thr  
260 265 270

Glu Ile Glu Ile Leu Lys Lys Leu Asn His Pro Cys Ile Ile Lys Ile  
275 280 285

Lys Asn Phe Phe Asp Ala Glu Asp Tyr Tyr Ile Val Leu Glu Leu Met  
290 295 300

Glu Gly Gly Glu Leu Phe Asp Lys Val Val Gly Asn Lys Arg Leu Lys  
305 310 315 320

Glu Ala Thr Cys Lys Leu Tyr Phe Tyr Gln Met Leu Leu Ala Val Gln  
325 330 335

Tyr Leu His Glu Asn Gly Ile Ile His Arg Asp Leu Lys Pro Glu Asn  
 340 345 350

Val Leu Leu Ser Ser Gln Glu Glu Asp Cys Leu Ile Lys Ile Thr Asp  
 355 360 365

Phe Gly His Ser Lys Ile Leu Gly Glu Thr Ser Leu Met Arg Thr Leu  
 370 375 380

Cys Gly Thr Pro Thr Tyr Leu Ala Pro Glu Val Leu Val Ser Val Gly  
 385 390 395 400

Thr Ala Gly Tyr Asn Arg Ala Val Asp Cys Trp Ser Leu Gly Val Ile  
 405 410 415

Leu Phe Ile Cys Leu Ser Gly Tyr Pro Pro Phe Ser Glu His Arg Thr  
 420 425 430

Gln Val Ser Leu Lys Asp Gln Ile Thr Ser Gly Lys Tyr Asn Phe Ile  
 435 440 445

Pro Glu Val Trp Ala Glu Val Ser Glu Lys Ala Leu Asp Leu Val Lys  
 450 455 460

Lys Leu Leu Val Val Asp Pro Lys Ala Arg Phe Thr Thr Glu Glu Ala  
 465 470 475 480

Leu Arg His Pro Trp Leu Gln Asp Glu Asp Met Lys Arg Lys Phe Gln  
 485 490 495

Asp Leu Leu Ser Glu Glu Asn Glu Ser Thr Ala Leu Pro Gln Val Leu  
 500 505 510

Ala Gln Pro Ser Thr Ser Arg Lys Arg Pro Arg Glu Gly Glu Ala Glu  
 515 520 525

Gly Ala Glu Thr Thr Lys Arg Pro Ala Val Cys Ala Ala Val Leu  
 530 535 540

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 <213> Human

<400> 3

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Ala Cys Ser Gln Pro His Gly Ser Val Thr Gln Ser Gln Gly Ser Ser	20	25	30
Ser Gln Ser Gln Gly Ile Ser Ser Ser Ser Thr Ser Thr Met Pro Asn	35	40	45
Ser Ser Gln Ser Ser His Ser Ser Ser Gly Thr Leu Ser Ser Leu Glu	50	55	60
Thr Val Ser Thr Gln Glu Leu Tyr Ser Ile Pro Glu Asp Gln Glu Pro	65	70	75
Glu Asp Gln Glu Pro Glu Glu Pro Thr Pro Ala Pro Trp Ala Arg Leu	85	90	95
Trp Ala Leu Gln Asp Gly Phe Ala Asn Leu Glu Cys Val Asn Asp Asn	100	105	110
Tyr Trp Phe Gly Arg Asp Lys Ser Cys Glu Tyr Cys Phe Asp Glu Pro	115	120	125
Leu Leu Lys Arg Thr Asp Lys Tyr Arg Thr Tyr Ser Lys Lys His Phe	130	135	140
Arg Ile Phe Arg Glu Val Gly Pro Lys Asn Ser Tyr Ile Ala Tyr Ile	145	150	155
Glu Asp His Ser Gly Asn Gly Thr Phe Val Asn Thr Glu Leu Val Gly	165	170	175
Lys Gly Lys Arg Arg Pro Leu Asn Asn Asn Ser Glu Ile Ala Leu Ser	180	185	190
Leu Ser Arg Asn Lys Val Phe Val Phe Phe Asp Leu Thr Val Asp Asp	195	200	205
Gln Ser Val Tyr Pro Lys Ala Leu Arg Asp Glu Tyr Ile Met Ser Lys	210	215	220
Thr Leu Gly Ser Gly Ala Cys Gly Glu Val Lys Leu Ala Phe Glu Arg	225	230	235
Lys Thr Cys Lys Lys Val Ala Ile Lys Ile Ile Ser Lys Arg Lys Phe	245	250	255

Ala Ile Gly Ser Ala Arg Glu Ala Asp Pro Ala Leu Asn Val Glu Thr  
260 265 270

Glu Ile Glu Ile Leu Lys Lys Leu Asn His Pro Cys Ile Ile Lys Ile  
275 280 285

Lys Asn Phe Phe Asp Ala Glu Asp Tyr Tyr Ile Val Leu Glu Leu Met  
290 295 300

Glu Gly Gly Glu Leu Phe Asp Lys Val Val Gly Asn Lys Arg Leu Lys  
305 310 315 320

Glu Ala Thr Cys Lys Leu Tyr Phe Tyr Gln Met Leu Leu Ala Val Gln  
325 330 335

Ile Thr Asp Phe Gly His Ser Lys Ile Leu Gly Glu Thr Ser Leu Met  
340 345 350

Arg Thr Leu Cys Gly Thr Pro Thr Tyr Leu Ala Pro Glu Val Leu Val  
355 360 365

Ser Val Gly Thr Ala Gly Tyr Asn Arg Ala Val Asp Cys Trp Ser Leu  
370 375 380

Gly Val Ile Leu Phe Ile Cys Leu Ser Gly Tyr Pro Pro Phe Ser Glu  
385 390 395 400

His Arg Thr Gln Val Ser Leu Lys Asp Gln Ile Thr Ser Gly Lys Tyr  
405 410 415

Asn Phe Ile Pro Glu Val Trp Ala Glu Val Ser Glu Lys Ala Leu Asp  
420 425 430

Leu Val Lys Lys Leu Leu Val Val Asp Pro Lys Ala Arg Phe Thr Thr  
435 440 445

Glu Glu Ala Leu Arg His Pro Trp Leu Gln Asp Glu Asp Met Lys Arg  
450 455 460

Lys Phe Gln Asp Leu Leu Ser Glu Glu Asn Glu Ser Thr Ala Leu Pro  
465 470 475 480

Gln Val Leu Ala Gln Pro Ser Thr Ser Arg Lys Arg Pro Arg Glu Gly  
485 490 495

Glu Ala Glu Gly Ala Glu Thr Thr Lys Arg Pro Ala Val Cys Ala Ala  
 500 505 510

Val Leu

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Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Val  
 35 40 45

Thr Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu Glu  
 50 55 60

Ile Thr Leu Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg Asn  
 65 70 75 80

Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly His  
 85 90 95

Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser Ile  
 100 105 110

Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Asp Trp  
 115 120 125

Ile Ala Tyr Ile Ser Arg Glu Ile Leu Arg Gly Leu Ala His Leu His  
 130 135 140

Ile His His Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu Leu  
 145 150 155 160

Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala Gln  
 165 170 175

Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro Tyr



180	185	190
Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala Thr		
195	200	205
Tyr Asp Tyr Arg Ser Asp Leu Trp Ser Cys Gly Ile Thr Ala Ile Glu		
210	215	220
Met Ala Glu Gly Gly Pro Pro Leu Cys Asp Met His Pro Met Arg Ala		
225	230	235
Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys Lys		
	245	250
Trp Ser Lys Lys Phe Phe Ser Phe Ile Glu Gly Cys Leu Val Lys Asn		
	260	265
Tyr Met Gln Arg Pro Ser Thr Glu Gln Leu Leu Lys His Pro Phe Ile		
	275	280
Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp His		
	290	295
Ile Asp Arg Thr Arg Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu Tyr		
305	310	315
Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Glu Val Pro Glu Gln Glu		
	325	330
Gly Glu Pro Ser Ser Ile Val Asn Val Pro Gly Glu Ser Thr Leu Arg		
	340	345
Arg Asp Phe Leu Arg Leu Gln Gln Glu Asn Lys Glu Arg Ser Glu Ala		
	355	360
Leu Arg Arg Gln Gln Leu Leu Gln Glu Gln Gln Leu Arg Glu Gln Glu		
	370	375
Glu Tyr Lys Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu Gln		
385	390	395
Gln Lys Glu Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu Arg		
	405	410
Glu Ala Arg Arg Gln Gln Glu Arg Glu Gln Arg Arg Arg Glu Gln Glu		
	420	425
		430

Glu Lys Arg Arg Leu Glu Glu Leu Glu Arg Arg Arg Lys Glu Glu Glu  
 435 440 445

Glu Arg Arg Arg Ala Glu Glu Glu Lys Arg Arg Val Glu Arg Glu Gln  
 450 455 460

Glu Tyr Ile Arg Arg Gln Leu Glu Glu Glu Gln Arg His Leu Glu Ile  
 465 470 475 480

Leu Gln Gln Gln Leu Leu Gln Glu Gln Ala Met Leu Leu His Asp His  
 485 490 495

Arg Arg Pro His Ala Gln Gln Gln Pro Pro Pro Gln Gln Gln Asp  
 500 505 510

Arg Ser Lys Pro Ser Phe His Ala Pro Glu Pro Lys Pro His Tyr Asp  
 515 520 525

Pro Ala Asp Arg Ala Arg Glu Val Gln Trp Ser His Leu Ala Ser Leu  
 530 535 540

Lys Asn Asn Val Ser Pro Val Ser Arg Ser His Ser Phe Ser Asp Pro  
 545 550 555 560

Ser Pro Lys Phe Ala His His His Leu Arg Ser Gln Asp Pro Cys Pro  
 565 570 575

Pro Ser Arg Ser Glu Gly Leu Ser Gln Ser Ser Asp Ser Lys Ser Glu  
 580 585 590

Val Pro Glu Pro Thr Gln Lys Ala Trp Ser Arg Ser Asp Ser Asp Glu  
 595 600 605

Val Pro Pro Arg Val Pro Val Arg Thr Thr Ser Arg Ser Pro Val Leu  
 610 615 620

Ser Arg Arg Asp Ser Pro Leu Gln Gly Gly Gly Gln Gln Asn Ser Gln  
 625 630 635 640

Ala Gly Gln Arg Asn Ser Thr Ser Ser Ile Glu Pro Arg Leu Leu Trp  
 645 650 655

Glu Arg Val Glu Lys Leu Val Pro Arg Pro Gly Ser Gly Ser Ser Ser  
 660 665 670

Gly Ser Ser Asn Ser Gly Ser Gln Pro Gly Ser His Pro Gly Ser Gln  
675 680 685

Ser Gly Ser Gly Glu Arg Phe Arg Val Arg Ser Ser Ser Lys Ser Glu  
690 695 700

Gly Ser Pro Ser Pro Arg Gln Glu Ser Ala Ala Lys Lys Pro Asp Asp  
705 710 715 720

Lys Lys Glu Val Phe Arg Ser Leu Lys Pro Ala Gly Glu Val Asp Leu  
725 730 735

Thr Ala Leu Ala Lys Glu Leu Arg Ala Val Glu Asp Val Arg Pro Pro  
740 745 750

His Lys Val Thr Asp Tyr Ser Ser Ser Ser Glu Glu Ser Gly Thr Thr  
755 760 765

Asp Glu Glu Glu Glu Asp Val Glu Gln Glu Gly Ala Asp Asp Ser Thr  
770 775 780

Ser Gly Pro Glu Asp Thr Arg Ala Ala Ser Ser Pro Asn Leu Ser Asn  
785 790 795 800

Gly Glu Thr Glu Ser Val Lys Thr Met Ile Val His Asp Asp Val Glu  
805 810 815

Ser Glu Pro Ala Met Thr Pro Ser Lys Glu Gly Thr Leu Ile Val Arg  
820 825 830

Gln Thr Gln Ser Ala Ser Ser Thr Leu Gln Lys His Lys Ser Ser Ser  
835 840 845

Ser Phe Thr Pro Phe Ile Asp Pro Arg Leu Leu Gln Ile Ser Pro Ser  
850 855 860

Ser Gly Thr Thr Val Thr Ser Val Val Gly Phe Ser Cys Asp Gly Leu  
865 870 875 880

Arg Pro Glu Ala Ile Arg Gln Asp Pro Thr Arg Lys Gly Ser Val Val  
885 890 895

Asn Val Asn Pro Thr Asn Thr Arg Pro Gln Ser Asp Thr Pro Glu Ile  
900 905 910

Arg Lys Tyr Lys Lys Arg Phe Asn Ser Glu Ile Leu Cys Ala Ala Leu  
 915 920 925

Trp Gly Val Asn Leu Leu Val Gly Thr Glu Ser Gly Leu Met Leu Leu  
 930 935 940

Asp Arg Ser Gly Gln Gly Lys Val Tyr Pro Leu Ile Ser Arg Arg Arg  
 945 950 955 960

Phe Gln Gln Met Asp Val Leu Glu Gly Leu Asn Val Leu Val Thr Ile  
 965 970 975

Ser Gly Lys Lys Asp Lys Leu Arg Val Tyr Tyr Leu Ser Trp Leu Arg  
 980 985 990

Asn Lys Ile Leu His Asn Asp Pro Glu Val Glu Lys Lys Gln Gly Trp  
 995 1000 1005

Thr Thr Val Gly Asp Leu Glu Gly Cys Val His Tyr Lys Val Val  
 1010 1015 1020

Lys Tyr Glu Arg Ile Lys Phe Leu Val Ile Ala Leu Lys Ser Ser  
 1025 1030 1035

Val Glu Val Tyr Ala Trp Ala Pro Lys Pro Tyr His Lys Phe Met  
 1040 1045 1050

Ala Phe Lys Ser Phe Gly Glu Leu Leu His Lys Pro Leu Leu Val  
 1055 1060 1065

Asp Leu Thr Val Glu Glu Gly Gln Arg Leu Lys Val Ile Tyr Gly  
 1070 1075 1080

Ser Cys Ala Gly Phe His Ala Val Asp Val Asp Ser Gly Ser Val  
 1085 1090 1095

Tyr Asp Ile Tyr Leu Pro Thr His Ile Gln Cys Ser Ile Lys Pro  
 1100 1105 1110

His Ala Ile Ile Ile Leu Pro Asn Thr Asp Gly Met Glu Leu Leu  
 1115 1120 1125

Val Cys Tyr Glu Asp Glu Gly Val Tyr Val Asn Thr Tyr Gly Arg  
 1130 1135 1140

Ile Thr Lys Asp Val Val Leu Gln Trp Gly Glu Met Pro Thr Ser

1145	1150	1155
Val Ala Tyr Ile Arg Ser Asn Gln Thr Met Gly Trp Gly Glu Lys		
1160	1165	1170
Ala Ile Glu Ile Arg Ser Val Glu Thr Gly His Leu Asp Gly Val		
1175	1180	1185
Phe Met His Lys Arg Ala Gln Arg Leu Lys Phe Leu Cys Gly Arg		
1190	1195	1200
Asn Asp Lys Val Phe Phe Ser Ser Val Arg Ser Gly Gly Ser Ser		
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Gln Val Tyr Phe Met Thr Leu Gly Arg Thr Ser Leu Leu Ser Trp		
1220	1225	1230
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Ser Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Val Val Gly		
20	25	30
Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly		
35	40	45
Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu		
50	55	60
Glu Ile Lys Leu Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg		
65	70	75 80
Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly		
85	90	95
His Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser		
100	105	110
Ile Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Asp		
115	120	125

Trp Ile Ala Tyr Ile Ser Arg Glu Ile Leu Arg Gly Leu Ala His Leu  
130 135 140

His Ile His His Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu  
145 150 155 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala  
165 170 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro  
180 185 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala  
195 200 205

Thr Tyr Asp Tyr Arg Ser Asp Leu Trp Ser Cys Gly Ile Thr Ala Ile  
210 215 220

Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg  
225 230 235 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys  
245 250 255

Lys Trp Ser Lys Lys Phe Phe Ser Phe Ile Glu Gly Cys Leu Val Lys  
260 265 270

Asn Tyr Met Gln Arg Pro Ser Thr Glu Gln Leu Leu Lys His Pro Phe  
275 280 285

Ile Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp  
290 295 300

His Ile Asp Arg Thr Arg Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu  
305 310 315 320

Tyr Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Val Pro Glu Gln  
325 330 335

Glu Gly Glu Pro Ser Ser Ile Val Asn Val Pro Gly Glu Ser Thr Leu  
340 345 350

Arg Arg Asp Phe Leu Arg Leu Gln Gln Glu Asn Lys Glu Arg Ser Glu  
355 360 365

Ala Leu Arg Arg Gln Gln Leu Leu Gln Glu Gln Gln Leu Arg Glu Gln  
 370 375 380

Glu Glu Tyr Lys Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu  
 385 390 395 400

Gln Gln Lys Glu Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu  
 405 410 415

Arg Glu Ala Arg Arg Gln Gln Glu Arg Glu Gln Arg Arg Arg Glu Gln  
 420 425 430

Glu Glu Lys Arg Arg Leu Glu Glu Leu Glu Arg Arg Arg Lys Glu Glu  
 435 440 445

Glu Glu Arg Arg Arg Ala Glu Glu Glu Lys Arg Arg Val Glu Arg Glu  
 450 455 460

Gln Glu Tyr Ile Arg Arg Gln Leu Glu Glu Glu Gln Arg His Leu Glu  
 465 470 475 480

Val Leu Gln Gln Gln Leu Leu Gln Glu Gln Ala Met Leu Leu Glu Cys  
 485 490 495

Arg Trp Arg Glu Met Glu Glu His Arg Gln Ala Glu Arg Leu Gln Arg  
 500 505 510

Gln Leu Gln Gln Glu Gln Ala Tyr Leu Leu Ser Leu Gln His Asp His  
 515 520 525

Arg Arg Pro His Pro Gln His Ser Gln Gln Pro Pro Pro Pro Gln Gln  
 530 535 540

Glu Arg Ser Lys Pro Ser Phe His Ala Pro Glu Pro Lys Ala His Tyr  
 545 550 555 560

Glu Pro Ala Asp Arg Ala Arg Glu Val Glu Asp Arg Phe Arg Lys Thr  
 565 570 575

Asn His Ser Ser Pro Glu Ala Gln Ser Lys Gln Thr Gly Arg Val Leu  
 580 585 590

Glu Pro Pro Val Pro Ser Arg Ser Glu Ser Phe Ser Asn Gly Asn Ser  
 595 600 605

Glu Ser Val His Pro Ala Leu Gln Arg Pro Ala Glu Pro Gln Val Pro

610	615	620
Val Arg Thr Thr Ser Arg Ser Pro Val Leu Ser Arg Arg Asp Ser Pro		
625	630	635 640
Leu Gln Gly Ser Gly Gln Gln Asn Ser Gln Ala Gly Gln Arg Asn Ser		
	645	650 655
Thr Ser Ile Glu Pro Arg Leu Leu Trp Glu Arg Val Glu Lys Leu Val		
	660	665 670
Pro Arg Pro Gly Ser Gly Ser Ser Ser Gly Ser Ser Asn Ser Gly Ser		
	675	680 685
Gln Pro Gly Ser His Pro Gly Ser Gln Ser Gly Ser Gly Glu Arg Phe		
	690	695 700
Arg Val Arg Ser Ser Ser Lys Ser Glu Gly Ser Pro Ser Gln Arg Leu		
	705	710 715 720
Glu Asn Ala Val Lys Lys Pro Glu Asp Lys Lys Glu Val Phe Arg Pro		
	725	730 735
Leu Lys Pro Ala Asp Leu Thr Ala Leu Ala Lys Glu Leu Arg Ala Val		
	740	745 750
Glu Asp Val Arg Pro Pro His Lys Val Thr Asp Tyr Ser Ser Ser Ser		
	755	760 765
Glu Glu Ser Gly Thr Thr Asp Glu Glu Asp Asp Asp Val Glu Gln Glu		
	770	775 780
Gly Ala Asp Glu Ser Thr Ser Gly Pro Glu Asp Thr Arg Ala Ala Ser		
	785	790 795 800
Ser Leu Asn Leu Ser Asn Gly Glu Thr Glu Ser Val Lys Thr Met Ile		
	805	810 815
Val His Asp Asp Val Glu Ser Glu Pro Ala Met Thr Pro Ser Lys Glu		
	820	825 830
Gly Thr Leu Ile Val Arg Gln Thr Gln Ser Ala Ser Ser Thr Leu Gln		
	835	840 845
Lys His Lys Ser Ser Ser Ser Phe Thr Pro Phe Ile Asp Pro Arg Leu		
	850	855 860



Leu Gln Ile Ser Pro Ser Ser Gly Thr Thr Val Thr Ser Val Val Gly  
865 870 875 880

Phe Ser Cys Asp Gly Met Arg Pro Glu Ala Ile Arg Gln Asp Pro Thr  
885 890 895

Arg Lys Gly Ser Val Val Asn Val Asn Pro Thr Asn Thr Arg Pro Gln  
900 905 910

Ser Asp Thr Pro Glu Ile Arg Lys Tyr Lys Lys Arg Phe Asn Ser Glu  
915 920 925

Ile Leu Cys Ala Ala Leu Trp Gly Val Asn Leu Leu Val Gly Thr Glu  
930 935 940

Ser Gly Leu Met Leu Leu Asp Arg Ser Gly Gln Gly Lys Val Tyr Pro  
945 950 955 960

Leu Ile Asn Arg Arg Arg Phe Gln Gln Met Asp Val Leu Glu Gly Leu  
965 970 975

Asn Val Leu Val Thr Ile Ser Gly Lys Lys Asp Lys Leu Arg Val Tyr  
980 985 990

Tyr Leu Ser Trp Leu Arg Asn Lys Ile Leu His Asn Asp Pro Glu Val  
995 1000 1005

Glu Lys Lys Gln Gly Trp Thr Thr Val Gly Asp Leu Glu Gly Cys  
1010 1015 1020

Val His Tyr Lys Val Val Lys Tyr Glu Arg Ile Lys Phe Leu Val  
1025 1030 1035

Ile Ala Leu Lys Ser Ser Val Glu Val Tyr Ala Trp Ala Pro Lys  
1040 1045 1050

Pro Tyr His Lys Phe Met Ala Phe Lys Ser Phe Gly Glu Leu Val  
1055 1060 1065

His Lys Pro Leu Leu Val Asp Leu Thr Val Glu Glu Gly Gln Arg  
1070 1075 1080

Leu Lys Val Ile Tyr Gly Ser Cys Ala Gly Phe His Ala Val Asp  
1085 1090 1095

Val Asp Ser Gly Ser Val Tyr Asp Ile Tyr Leu Pro Thr His Ile  
 1100 1105 1110

Gln Cys Ser Ile Lys Pro His Ala Ile Ile Ile Leu Pro Asn Thr  
 1115 1120 1125

Asp Gly Met Glu Leu Leu Val Cys Tyr Glu Asp Glu Gly Val Tyr  
 1130 1135 1140

Val Asn Thr Tyr Gly Arg Ile Thr Lys Asp Val Val Leu Gln Trp  
 1145 1150 1155

Gly Glu Met Pro Thr Ser Val Ala Tyr Ile Arg Ser Asn Gln Thr  
 1160 1165 1170

Met Gly Trp Gly Glu Lys Ala Ile Glu Ile Arg Ser Val Glu Thr  
 1175 1180 1185

Gly His Leu Asp Gly Val Phe Met His Lys Arg Ala Gln Arg Leu  
 1190 1195 1200

Lys Phe Leu Cys Glu Arg Asn Asp Lys Val Phe Phe Ala Ser Val  
 1205 1210 1215

Arg Ser Gly Gly Ser Ser Gln Val Tyr Phe Met Thr Leu Gly Arg  
 1220 1225 1230

Thr Ser Leu Leu Ser Trp  
 1235

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 <213> HUMAN

<400> 6

Met Ala Asn Asp Ser Pro Ala Lys Ser Leu Val Asp Ile Asp Leu Ser  
 1 5 10 15

Ser Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Val Val Gly  
 20 25 30

Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly  
 35 40 45

Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu

50		55		60
Glu Ile Lys Leu Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg	65	70	75	80
Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly	85	90	95	
His Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser	100	105	110	
Ile Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Asp	115	120	125	
Trp Ile Ala Tyr Ile Ser Arg Glu Ile Leu Arg Gly Leu Ala His Leu	130	135	140	
His Ile His His Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu	145	150	155	160
Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala	165	170	175	
Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro	180	185	190	
Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala	195	200	205	
Thr Tyr Asp Tyr Arg Ser Asp Leu Trp Ser Cys Gly Ile Thr Ala Ile	210	215	220	
Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg	225	230	235	240
Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys	245	250	255	
Lys Trp Ser Lys Lys Phe Phe Ser Phe Ile Glu Gly Cys Leu Val Lys	260	265	270	
Asn Tyr Met Gln Arg Pro Ser Thr Glu Gln Leu Leu Lys His Pro Phe	275	280	285	
Ile Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp	290	295	300	

His Ile Asp Arg Thr Arg Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu  
 305 310 315 320

Tyr Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Val Pro Glu Gln  
 325 330 335

Glu Gly Glu Pro Ser Ser Ile Val Asn Val Pro Gly Glu Ser Thr Leu  
 340 345 350

Arg Arg Asp Phe Leu Arg Leu Gln Gln Glu Asn Lys Glu Arg Ser Glu  
 355 360 365

Ala Leu Arg Arg Gln Gln Leu Leu Gln Glu Gln Gln Leu Arg Glu Gln  
 370 375 380

Glu Glu Tyr Lys Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu  
 385 390 395 400

Gln Gln Lys Glu Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu  
 405 410 415

Arg Glu Ala Arg Arg Gln Gln Glu Arg Glu Gln Arg Arg Arg Glu Gln  
 420 425 430

Glu Glu Lys Arg Arg Leu Glu Glu Leu Glu Arg Arg Arg Lys Glu Glu  
 435 440 445

Glu Glu Arg Arg Arg Ala Glu Glu Glu Lys Arg Arg Val Glu Arg Glu  
 450 455 460

Gln Glu Tyr Ile Arg Arg Gln Leu Glu Glu Glu Gln Arg His Leu Glu  
 465 470 475 480

Val Leu Gln Gln Gln Leu Leu Gln Glu Gln Ala Met Leu Leu His Asp  
 485 490 495

His Arg Arg Pro His Pro Gln His Ser Gln Gln Pro Pro Pro Pro Gln  
 500 505 510

Gln Glu Arg Ser Lys Pro Ser Phe His Ala Pro Glu Pro Lys Ala His  
 515 520 525

Tyr Glu Pro Ala Asp Arg Ala Arg Glu Val Glu Asp Arg Phe Arg Lys  
 530 535 540

Thr Asn His Ser Ser Pro Glu Ala Gln Ser Lys Gln Thr Gly Arg Val  
 545 550 555 560

Leu Glu Pro Pro Val Pro Ser Arg Ser Glu Ser Phe Ser Asn Gly Asn  
 565 570 575

Ser Glu Ser Val His Pro Ala Leu Gln Arg Pro Ala Glu Pro Gln Val  
 580 585 590

Pro Val Arg Thr Thr Ser Arg Ser Pro Val Leu Ser Arg Arg Asp Ser  
 595 600 605

Pro Leu Gln Gly Ser Gly Gln Gln Asn Ser Gln Ala Gly Gln Arg Asn  
 610 615 620

Ser Thr Ser Ser Ile Glu Pro Arg Leu Leu Trp Glu Arg Val Glu Lys  
 625 630 635 640

Leu Val Pro Arg Pro Gly Ser Gly Ser Ser Ser Gly Ser Ser Asn Ser  
 645 650 655

Gly Ser Gln Pro Gly Ser His Pro Gly Ser Gln Ser Gly Ser Gly Glu  
 660 665 670

Arg Phe Arg Val Arg Ser Ser Ser Lys Ser Glu Gly Ser Pro Ser Gln  
 675 680 685

Arg Leu Glu Asn Ala Val Lys Lys Pro Glu Asp Lys Lys Glu Val Phe  
 690 695 700

Arg Pro Leu Lys Pro Ala Gly Glu Val Asp Leu Thr Ala Leu Ala Lys  
 705 710 715 720

Glu Leu Arg Ala Val Glu Asp Val Arg Pro Pro His Lys Val Thr Asp  
 725 730 735

Tyr Ser Ser Ser Ser Glu Glu Ser Gly Thr Thr Asp Glu Glu Asp Asp  
 740 745 750

Asp Val Glu Gln Glu Gly Ala Asp Glu Ser Thr Ser Gly Pro Glu Asp  
 755 760 765

Thr Arg Ala Ala Ser Ser Leu Asn Leu Ser Asn Gly Glu Thr Glu Ser  
 770 775 780

Val Lys Thr Met Ile Val His Asp Asp Val Glu Ser Glu Pro Ala Met  
785 790 795 800

Thr Pro Ser Lys Glu Gly Thr Leu Ile Val Arg Gln Thr Gln Ser Ala  
805 810 815

Ser Ser Thr Leu Gln Lys His Lys Ser Ser Ser Ser Phe Thr Pro Phe  
820 825 830

Ile Asp Pro Arg Leu Leu Gln Ile Ser Pro Ser Ser Gly Thr Thr Val  
835 840 845

Thr Ser Val Val Gly Phe Ser Cys Asp Gly Met Arg Pro Glu Ala Ile  
850 855 860

Arg Gln Asp Pro Thr Arg Lys Gly Ser Val Val Asn Val Asn Pro Thr  
865 870 875 880

Asn Thr Arg Pro Gln Ser Asp Thr Pro Glu Ile Arg Lys Tyr Lys Lys  
885 890 895

Arg Phe Asn Ser Glu Ile Leu Cys Ala Ala Leu Trp Gly Val Asn Leu  
900 905 910

Leu Val Gly Thr Glu Ser Gly Leu Met Leu Leu Asp Arg Ser Gly Gln  
915 920 925

Gly Lys Val Tyr Pro Leu Ile Asn Arg Arg Arg Phe Gln Gln Met Asp  
930 935 940

Val Leu Glu Gly Leu Asn Val Leu Val Thr Ile Ser Gly Lys Lys Asp  
945 950 955 960

Lys Leu Arg Val Tyr Tyr Leu Ser Trp Leu Arg Asn Lys Ile Leu His  
965 970 975

Asn Asp Pro Glu Val Glu Lys Lys Gln Gly Trp Thr Thr Val Gly Asp  
980 985 990

Leu Glu Gly Cys Val His Tyr Lys Val Val Lys Tyr Glu Arg Ile Lys  
995 1000 1005

Phe Leu Val Ile Ala Leu Lys Ser Ser Val Glu Val Tyr Ala Trp  
1010 1015 1020

Ala Pro Lys Pro Tyr His Lys Phe Met Ala Phe Lys Ser Phe Gly

1025		1030		1035
Glu Leu Val His Lys Pro	Leu Leu Val Asp Leu Thr	Val Glu Glu		
1040	1045	1050		
Gly Gln Arg Leu Lys Val	Ile Tyr Gly Ser Cys Ala	Gly Phe His		
1055	1060	1065		
Ala Val Asp Val Asp Ser	Gly Ser Val Tyr Asp Ile	Tyr Leu Pro		
1070	1075	1080		
Thr His Ile Gln Cys Ser	Ile Lys Pro His Ala Ile	Ile Ile Leu		
1085	1090	1095		
Pro Asn Thr Asp Gly Met	Glu Leu Leu Val Cys Tyr	Glu Asp Glu		
1100	1105	1110		
Gly Val Tyr Val Asn Thr	Tyr Gly Arg Ile Thr Lys	Asp Val Val		
1115	1120	1125		
Leu Gln Trp Gly Glu Met	Pro Thr Ser Val Ala Tyr	Ile Arg Ser		
1130	1135	1140		
Asn Gln Thr Met Gly Trp	Gly Glu Lys Ala Ile Glu	Ile Arg Ser		
1145	1150	1155		
Val Glu Thr Gly His Leu	Asp Gly Val Phe Met His	Lys Arg Ala		
1160	1165	1170		
Gln Arg Leu Lys Phe Leu	Cys Glu Arg Asn Asp Lys	Val Phe Phe		
1175	1180	1185		
Ala Ser Val Arg Ser Gly	Gly Ser Ser Gln Val Tyr	Phe Met Thr		
1190	1195	1200		
Leu Gly Arg Thr Ser Leu	Leu Ser Trp			
1205	1210			

<210> 7  
 <211> 1320  
 <212> PRT  
 <213> HUMAN

<400> 7

Met	Ala	Asn	Asp	Ser	Pro	Ala	Lys	Ser	Leu	Val	Asp	Ile	Asp	Leu	Ser
1				5					10					15	

Ser Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Val Val Gly  
 20 25 30

Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly  
 35 40 45

Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu  
 50 55 60

Glu Ile Lys Leu Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg  
 65 70 75 80

Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly  
 85 90 95

His Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser  
 100 105 110

Ile Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Asp  
 115 120 125

Trp Ile Ala Tyr Ile Ser Arg Glu Ile Leu Arg Gly Leu Ala His Leu  
 130 135 140

His Ile His His Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu  
 145 150 155 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala  
 165 170 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro  
 180 185 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala  
 195 200 205

Thr Tyr Asp Tyr Arg Ser Asp Leu Trp Ser Cys Gly Ile Thr Ala Ile  
 210 215 220

Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg  
 225 230 235 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys  
 245 250 255



Lys Trp Ser Lys Lys Phe Phe Ser Phe Ile Glu Gly Cys Leu Val Lys  
260 265 270

Asn Tyr Met Gln Arg Pro Ser Thr Glu Gln Leu Leu Lys His Pro Phe  
275 280 285

Ile Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp  
290 295 300

His Ile Asp Arg Thr Arg Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu  
305 310 315 320

Tyr Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Glu Val Pro Glu Gln  
325 330 335

Glu Gly Glu Pro Ser Ser Ile Val Asn Val Pro Gly Glu Ser Thr Leu  
340 345 350

Arg Arg Asp Phe Leu Arg Leu Gln Gln Glu Asn Lys Glu Arg Ser Glu  
355 360 365

Ala Leu Arg Arg Gln Gln Leu Leu Gln Glu Gln Gln Leu Arg Glu Gln  
370 375 380

Glu Glu Tyr Lys Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu  
385 390 395 400

Gln Gln Lys Glu Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu  
405 410 415

Arg Glu Ala Arg Arg Gln Gln Glu Arg Glu Gln Arg Arg Arg Glu Gln  
420 425 430

Glu Glu Lys Arg Arg Leu Glu Glu Leu Glu Arg Arg Arg Lys Glu Glu  
435 440 445

Glu Glu Arg Arg Arg Ala Glu Glu Glu Lys Arg Arg Val Glu Arg Glu  
450 455 460

Gln Glu Tyr Ile Arg Arg Gln Leu Glu Glu Glu Gln Arg His Leu Glu  
465 470 475 480

Val Leu Gln Gln Gln Leu Leu Gln Glu Gln Ala Met Leu Leu Glu Cys  
485 490 495

Arg Trp Arg Glu Met Glu Glu His Arg Gln Ala Glu Arg Leu Gln Arg

500	505	510
Gln Leu Gln Gln Glu Gln Ala Tyr Leu Leu Ser Leu Gln His Asp His		
515	520	525
Arg Arg Pro His Pro Gln His Ser Gln Gln Pro Pro Pro Pro Gln Gln		
530	535	540
Glu Arg Ser Lys Pro Ser Phe His Ala Pro Glu Pro Lys Ala His Tyr		
545	550	555
Glu Pro Ala Asp Arg Ala Arg Glu Val Glu Asp Arg Phe Arg Lys Thr		
565	570	575
Asn His Ser Ser Pro Glu Ala Gln Ser Lys Gln Thr Gly Arg Val Leu		
580	585	590
Glu Pro Pro Val Pro Ser Arg Ser Glu Ser Phe Ser Asn Gly Asn Ser		
595	600	605
Glu Ser Val His Pro Ala Leu Gln Arg Pro Ala Glu Pro Gln Val Gln		
610	615	620
Trp Ser His Leu Ala Ser Leu Lys Asn Asn Val Ser Pro Val Ser Arg		
625	630	635
Ser His Ser Phe Ser Asp Pro Ser Pro Lys Phe Ala His His His Leu		
645	650	655
Arg Ser Gln Asp Pro Cys Pro Pro Ser Arg Ser Glu Val Leu Ser Gln		
660	665	670
Ser Ser Asp Ser Lys Ser Glu Ala Pro Asp Pro Thr Gln Lys Ala Trp		
675	680	685
Ser Arg Ser Asp Ser Asp Glu Val Pro Pro Arg Val Pro Val Arg Thr		
690	695	700
Thr Ser Arg Ser Pro Val Leu Ser Arg Arg Asp Ser Pro Leu Gln Gly		
705	710	715
Ser Gly Gln Gln Asn Ser Gln Ala Gly Gln Arg Asn Ser Thr Ser Ser		
725	730	735
Ile Glu Pro Arg Leu Leu Trp Glu Arg Val Glu Lys Leu Val Pro Arg		
740	745	750

Pro Gly Ser Gly Ser Ser Ser Gly Ser Ser Asn Ser Gly Ser Gln Pro  
755 760 765

Gly Ser His Pro Gly Ser Gln Ser Gly Ser Gly Glu Arg Phe Arg Val  
770 775 780

Arg Ser Ser Ser Lys Ser Glu Gly Ser Pro Ser Gln Arg Leu Glu Asn  
785 790 795 800

Ala Val Lys Lys Pro Glu Asp Lys Lys Glu Val Phe Arg Pro Leu Lys  
805 810 815

Pro Ala Gly Glu Val Asp Leu Thr Ala Leu Ala Lys Glu Leu Arg Ala  
820 825 830

Val Glu Asp Val Arg Pro Pro His Lys Val Thr Asp Tyr Ser Ser Ser  
835 840 845

Ser Glu Glu Ser Gly Thr Thr Asp Glu Glu Asp Asp Asp Val Glu Gln  
850 855 860

Glu Gly Ala Asp Glu Ser Thr Ser Gly Pro Glu Asp Thr Arg Ala Ala  
865 870 875 880

Ser Ser Leu Asn Leu Ser Asn Gly Glu Thr Glu Ser Val Lys Thr Met  
885 890 895

Ile Val His Asp Asp Val Glu Ser Glu Pro Ala Met Thr Pro Ser Lys  
900 905 910

Glu Gly Thr Leu Ile Val Arg Gln Thr Gln Ser Ala Ser Ser Thr Leu  
915 920 925

Gln Lys His Lys Ser Ser Ser Ser Phe Thr Pro Phe Ile Asp Pro Arg  
930 935 940

Leu Leu Gln Ile Ser Pro Ser Ser Gly Thr Thr Val Thr Ser Val Val  
945 950 955 960

Gly Phe Ser Cys Asp Gly Met Arg Pro Glu Ala Ile Arg Gln Asp Pro  
965 970 975

Thr Arg Lys Gly Ser Val Val Asn Val Asn Pro Thr Asn Thr Arg Pro  
980 985 990

Gln Ser Asp Thr Pro Glu Ile Arg Lys Tyr Lys Lys Arg Phe Asn Ser  
 995 1000 1005

Glu Ile Leu Cys Ala Ala Leu Trp Gly Val Asn Leu Leu Val Gly  
 1010 1015 1020

Thr Glu Ser Gly Leu Met Leu Leu Asp Arg Ser Gly Gln Gly Lys  
 1025 1030 1035

Val Tyr Pro Leu Ile Asn Arg Arg Arg Phe Gln Gln Met Asp Val  
 1040 1045 1050

Leu Glu Gly Leu Asn Val Leu Val Thr Ile Ser Gly Lys Lys Asp  
 1055 1060 1065

Lys Leu Arg Val Tyr Tyr Leu Ser Trp Leu Arg Asn Lys Ile Leu  
 1070 1075 1080

His Asn Asp Pro Glu Val Glu Lys Lys Gln Gly Trp Thr Thr Val  
 1085 1090 1095

Gly Asp Leu Glu Gly Cys Val His Tyr Lys Val Val Lys Tyr Glu  
 1100 1105 1110

Arg Ile Lys Phe Leu Val Ile Ala Leu Lys Ser Ser Val Glu Val  
 1115 1120 1125

Tyr Ala Trp Ala Pro Lys Pro Tyr His Lys Phe Met Ala Phe Lys  
 1130 1135 1140

Ser Phe Gly Glu Leu Val His Lys Pro Leu Leu Val Asp Leu Thr  
 1145 1150 1155

Val Glu Glu Gly Gln Arg Leu Lys Val Ile Tyr Gly Ser Cys Ala  
 1160 1165 1170

Gly Phe His Ala Val Asp Val Asp Ser Gly Ser Val Tyr Asp Ile  
 1175 1180 1185

Tyr Leu Pro Thr His Ile Gln Cys Ser Ile Lys Pro His Ala Ile  
 1190 1195 1200

Ile Ile Leu Pro Asn Thr Asp Gly Met Glu Leu Leu Val Cys Tyr  
 1205 1210 1215

Glu Asp Glu Gly Val Tyr Val Asn Thr Tyr Gly Arg Ile Thr Lys  
 1220 1225 1230

Asp Val Val Leu Gln Trp Gly Glu Met Pro Thr Ser Val Ala Tyr  
 1235 1240 1245

Ile Arg Ser Asn Gln Thr Met Gly Trp Gly Glu Lys Ala Ile Glu  
 1250 1255 1260

Ile Arg Ser Val Glu Thr Gly His Leu Asp Gly Val Phe Met His  
 1265 1270 1275

Lys Arg Ala Gln Arg Leu Lys Phe Leu Cys Glu Arg Asn Asp Lys  
 1280 1285 1290

Val Phe Phe Ala Ser Val Arg Ser Gly Gly Ser Ser Gln Val Tyr  
 1295 1300 1305

Phe Met Thr Leu Gly Arg Thr Ser Leu Leu Ser Trp  
 1310 1315 1320

<210> 8  
 <211> 1166  
 <212> PRT  
 <213> HUMAN

<400> 8

Met Ala Asn Asp Ser Pro Ala Lys Ser Leu Val Asp Ile Asp Leu Ser  
 1 5 10 15

Ser Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Val Val Gly  
 20 25 30

Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly  
 35 40 45

Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu  
 50 55 60

Glu Ile Lys Leu Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg  
 65 70 75 80

Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly  
 85 90 95

His Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser  
 100 105 110

Ile Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Asp  
 115 120 125

Trp Ile Ala Tyr Ile Ser Arg Glu Ile Leu Arg Gly Leu Ala His Leu  
 130 135 140

His Ile His His Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu  
 145 150 155 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala  
 165 170 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro  
 180 185 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala  
 195 200 205

Thr Tyr Asp Tyr Arg Ser Asp Leu Trp Ser Cys Gly Ile Thr Ala Ile  
 210 215 220

Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg  
 225 230 235 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys  
 245 250 255

Lys Trp Ser Lys Lys Phe Phe Ser Phe Ile Glu Gly Cys Leu Val Lys  
 260 265 270

Asn Tyr Met Gln Arg Pro Ser Thr Glu Gln Leu Leu Lys His Pro Phe  
 275 280 285

Ile Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp  
 290 295 300

His Ile Asp Arg Thr Arg Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu  
 305 310 315 320

Tyr Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Val Pro Glu Gln  
 325 330 335

Glu Gly Glu Pro Ser Ser Ile Val Asn Val Pro Gly Glu Ser Thr Leu  
 340 345 350

Arg Arg Asp Phe Leu Arg Leu Gln Gln Glu Asn Lys Glu Arg Ser Glu  
 355 360 365

Ala Leu Arg Arg Gln Gln Leu Leu Gln Glu Gln Gln Leu Arg Glu Gln  
 370 375 380

Glu Glu Tyr Lys Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu  
 385 390 395 400

Gln Gln Lys Glu Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu  
 405 410 415

Arg Glu Ala Arg Arg Gln Gln Glu Arg Glu Gln Arg Arg Arg Glu Gln  
 420 425 430

Glu Glu Lys Arg Arg Leu Glu Glu Leu Glu Arg Arg Arg Lys Glu Glu  
 435 440 445

Glu Glu Arg Arg Arg Ala Glu Glu Glu Lys Arg Arg Val Glu Arg Glu  
 450 455 460

Gln Glu Tyr Ile Arg Arg Gln Leu Glu Glu Glu Gln Arg His Leu Glu  
 465 470 475 480

Val Leu Gln Gln Gln Leu Leu Gln Glu Gln Ala Met Leu Leu His Asp  
 485 490 495

His Arg Arg Pro His Pro Gln His Ser Gln Gln Pro Pro Pro Pro Gln  
 500 505 510

Gln Glu Arg Ser Lys Pro Ser Phe His Ala Pro Glu Pro Lys Ala His  
 515 520 525

Tyr Glu Pro Ala Asp Arg Ala Arg Glu Val Pro Val Arg Thr Thr Ser  
 530 535 540

Arg Ser Pro Val Leu Ser Arg Arg Asp Ser Pro Leu Gln Gly Ser Gly  
 545 550 555 560

Gln Gln Asn Ser Gln Ala Gly Gln Arg Asn Ser Thr Ser Ser Ile Glu  
 565 570 575

Pro Arg Leu Leu Trp Glu Arg Val Glu Lys Leu Val Pro Arg Pro Gly  
 580 585 590

Ser Gly Ser Ser Ser Gly Ser Ser Asn Ser Gly Ser Gln Pro Gly Ser  
 595 600 605

His Pro Gly Ser Gln Ser Gly Ser Gly Glu Arg Phe Arg Val Arg Ser  
 610 615 620

Ser Ser Lys Ser Glu Gly Ser Pro Ser Gln Arg Leu Glu Asn Ala Val  
 625 630 635 640

Lys Lys Pro Glu Asp Lys Lys Glu Val Phe Arg Pro Leu Lys Pro Ala  
 645 650 655

Gly Glu Val Asp Leu Thr Ala Leu Ala Lys Glu Leu Arg Ala Val Glu  
 660 665 670

Asp Val Arg Pro Pro His Lys Val Thr Asp Tyr Ser Ser Ser Ser Glu  
 675 680 685

Glu Ser Gly Thr Thr Asp Glu Glu Asp Asp Asp Val Glu Gln Glu Gly  
 690 695 700

Ala Asp Glu Ser Thr Ser Gly Pro Glu Asp Thr Arg Ala Ala Ser Ser  
 705 710 715 720

Leu Asn Leu Ser Asn Gly Glu Thr Glu Ser Val Lys Thr Met Ile Val  
 725 730 735

His Asp Asp Val Glu Ser Glu Pro Ala Met Thr Pro Ser Lys Glu Gly  
 740 745 750

Thr Leu Ile Val Arg Gln Thr Gln Ser Ala Ser Ser Thr Leu Gln Lys  
 755 760 765

His Lys Ser Ser Ser Ser Phe Thr Pro Phe Ile Asp Pro Arg Leu Leu  
 770 775 780

Gln Ile Ser Pro Ser Ser Gly Thr Thr Val Thr Ser Val Val Gly Phe  
 785 790 795 800

Ser Cys Asp Gly Met Arg Pro Glu Ala Ile Arg Gln Asp Pro Thr Arg  
 805 810 815

Lys Gly Ser Val Val Asn Val Asn Pro Thr Asn Thr Arg Pro Gln Ser  
 820 825 830

Asp Thr Pro Glu Ile Arg Lys Tyr Lys Lys Arg Phe Asn Ser Glu Ile



835	840	845
Leu Cys Ala Ala Leu Trp Gly Val Asn Leu Leu Val Gly Thr Glu Ser		
850	855	860
Gly Leu Met Leu Leu Asp Arg Ser Gly Gln Gly Lys Val Tyr Pro Leu		
865	870	875
Ile Asn Arg Arg Arg Phe Gln Gln Met Asp Val Leu Glu Gly Leu Asn		
	885	890
Val Leu Val Thr Ile Ser Gly Lys Lys Asp Lys Leu Arg Val Tyr Tyr		
	900	905
Leu Ser Trp Leu Arg Asn Lys Ile Leu His Asn Asp Pro Glu Val Glu		
	915	920
Lys Lys Gln Gly Trp Thr Thr Val Gly Asp Leu Glu Gly Cys Val His		
	930	935
Tyr Lys Val Val Lys Tyr Glu Arg Ile Lys Phe Leu Val Ile Ala Leu		
	945	950
Lys Ser Ser Val Glu Val Tyr Ala Trp Ala Pro Lys Pro Tyr His Lys		
	965	970
Phe Met Ala Phe Lys Ser Phe Gly Glu Leu Val His Lys Pro Leu Leu		
	980	985
Val Asp Leu Thr Val Glu Glu Gly Gln Arg Leu Lys Val Ile Tyr Gly		
	995	1000
Ser Cys Ala Gly Phe His Ala Val Asp Val Asp Ser Gly Ser Val		
	1010	1015
Tyr Asp Ile Tyr Leu Pro Thr His Val Arg Lys Asn Pro His Ser		
	1025	1030
Met Ile Gln Cys Ser Ile Lys Pro His Ala Ile Ile Ile Leu Pro		
	1040	1045
Asn Thr Asp Gly Met Glu Leu Leu Val Cys Tyr Glu Asp Glu Gly		
	1055	1060
Val Tyr Val Asn Thr Tyr Gly Arg Ile Thr Lys Asp Val Val Leu		
	1070	1075
		1080

Gln Trp Gly Glu Met Pro Thr Ser Val Ala Tyr Ile Arg Ser Asn  
 1085 1090 1095

Gln Thr Met Gly Trp Gly Glu Lys Ala Ile Glu Ile Arg Ser Val  
 1100 1105 1110

Glu Thr Gly His Leu Asp Gly Val Phe Met His Lys Arg Ala Gln  
 1115 1120 1125

Arg Leu Lys Phe Leu Cys Glu Arg Asn Asp Lys Val Phe Phe Ala  
 1130 1135 1140

Ser Val Arg Ser Gly Gly Ser Ser Gln Val Tyr Phe Met Thr Leu  
 1145 1150 1155

Gly Arg Thr Ser Leu Leu Ser Trp  
 1160 1165

<210> 9  
 <211> 1239  
 <212> PRT  
 <213> HUMAN

<400> 9

Met Ala Asn Asp Ser Pro Ala Lys Ser Leu Val Asp Ile Asp Leu Ser  
 1 5 10 15

Ser Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Val Val Gly  
 20 25 30

Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly  
 35 40 45

Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu  
 50 55 60

Glu Ile Lys Leu Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg  
 65 70 75 80

Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly  
 85 90 95

His Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser  
 100 105 110

Ile Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Asp  
 115 120 125

Trp Ile Ala Tyr Ile Ser Arg Glu Ile Leu Arg Gly Leu Ala His Leu  
 130 135 140

His Ile His His Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu  
 145 150 155 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala  
 165 170 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro  
 180 185 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala  
 195 200 205

Thr Tyr Asp Tyr Arg Ser Asp Leu Trp Ser Cys Gly Ile Thr Ala Ile  
 210 215 220

Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg  
 225 230 235 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys  
 245 250 255

Lys Trp Ser Lys Lys Phe Phe Ser Phe Ile Glu Gly Cys Leu Val Lys  
 260 265 270

Asn Tyr Met Gln Arg Pro Ser Thr Glu Gln Leu Leu Lys His Pro Phe  
 275 280 285

Ile Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp  
 290 295 300

His Ile Asp Arg Thr Arg Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu  
 305 310 315 320

Tyr Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Glu Val Pro Glu Gln  
 325 330 335

Glu Gly Glu Pro Ser Ser Ile Val Asn Val Pro Gly Glu Ser Thr Leu  
 340 345 350

Arg Arg Asp Phe Leu Arg Leu Gln Gln Glu Asn Lys Glu Arg Ser Glu

355		360		365
Ala Leu Arg Arg Gln Gln Leu Leu Gln Glu Gln Gln Leu Arg Glu Gln				
370		375		380
Glu Glu Tyr Lys Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu				
385		390		400
Gln Gln Lys Glu Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu				
	405		410	415
Arg Glu Ala Arg Arg Gln Gln Glu Arg Glu Gln Arg Arg Arg Glu Gln				
	420		425	430
Glu Glu Lys Arg Arg Leu Glu Glu Leu Glu Arg Arg Arg Lys Glu Glu				
	435		440	445
Glu Glu Arg Arg Arg Ala Glu Glu Glu Lys Arg Arg Val Glu Arg Glu				
	450		455	460
Gln Glu Tyr Ile Arg Arg Gln Leu Glu Glu Glu Gln Arg His Leu Glu				
465		470		475
Val Leu Gln Gln Gln Leu Leu Gln Glu Gln Ala Met Leu Leu Glu Cys				
	485		490	495
Arg Trp Arg Glu Met Glu Glu His Arg Gln Ala Glu Arg Leu Gln Arg				
	500		505	510
Gln Leu Gln Gln Glu Gln Ala Tyr Leu Leu Ser Leu Gln His Asp His				
	515		520	525
Arg Arg Pro His Pro Gln His Ser Gln Gln Pro Pro Pro Pro Gln Gln				
	530		535	540
Glu Arg Ser Lys Pro Ser Phe His Ala Pro Glu Pro Lys Ala His Tyr				
545		550		555
Glu Pro Ala Asp Arg Ala Arg Glu Val Glu Asp Arg Phe Arg Lys Thr				
	565		570	575
Asn His Ser Ser Pro Glu Ala Gln Ser Lys Gln Thr Gly Arg Val Leu				
	580		585	590
Glu Pro Pro Val Pro Ser Arg Ser Glu Ser Phe Ser Asn Gly Asn Ser				
	595		600	605

Glu Ser Val His Pro Ala Leu Gln Arg Pro Ala Glu Pro Gln Val Pro  
610 615 620

Val Arg Thr Thr Ser Arg Ser Pro Val Leu Ser Arg Arg Asp Ser Pro  
625 630 635 640

Leu Gln Gly Ser Gly Gln Gln Asn Ser Gln Ala Gly Gln Arg Asn Ser  
645 650 655

Thr Ser Ile Glu Pro Arg Leu Leu Trp Glu Arg Val Glu Lys Leu Val  
660 665 670

Pro Arg Pro Gly Ser Gly Ser Ser Ser Gly Ser Ser Asn Ser Gly Ser  
675 680 685

Gln Pro Gly Ser His Pro Gly Ser Gln Ser Gly Ser Gly Glu Arg Phe  
690 695 700

Arg Val Arg Ser Ser Ser Lys Ser Glu Gly Ser Pro Ser Gln Arg Leu  
705 710 715 720

Glu Asn Ala Val Lys Lys Pro Glu Asp Lys Lys Glu Val Phe Arg Pro  
725 730 735

Leu Lys Pro Ala Asp Leu Thr Ala Leu Ala Lys Glu Leu Arg Ala Val  
740 745 750

Glu Asp Val Arg Pro Pro His Lys Val Thr Asp Tyr Ser Ser Ser Ser  
755 760 765

Glu Glu Ser Gly Thr Thr Asp Glu Glu Asp Asp Asp Val Glu Gln Glu  
770 775 780

Gly Ala Asp Glu Ser Thr Ser Gly Pro Glu Asp Thr Arg Ala Ala Ser  
785 790 795 800

Ser Leu Asn Leu Ser Asn Gly Glu Thr Glu Ser Val Lys Thr Met Ile  
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Val His Asp Asp Val Glu Ser Glu Pro Ala Met Thr Pro Ser Lys Glu  
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Gly Thr Leu Ile Val Arg Arg Thr Gln Ser Ala Ser Ser Thr Leu Gln  
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Lys His Lys Ser Ser Ser Ser Phe Thr Pro Phe Ile Asp Pro Arg Leu  
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Leu Gln Ile Ser Pro Ser Ser Gly Thr Thr Val Thr Ser Val Val Gly  
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Phe Ser Cys Asp Gly Met Arg Pro Glu Ala Ile Arg Gln Asp Pro Thr  
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Arg Lys Gly Ser Val Val Asn Val Asn Pro Thr Asn Thr Arg Pro Gln  
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Ser Asp Thr Pro Glu Ile Arg Lys Tyr Lys Lys Arg Phe Asn Ser Glu  
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Ile Leu Cys Ala Ala Leu Trp Gly Val Asn Leu Leu Val Gly Thr Glu  
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Ser Gly Leu Met Leu Leu Asp Arg Ser Gly Gln Gly Lys Val Tyr Pro  
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Leu Ile Asn Arg Arg Arg Phe Gln Gln Met Asp Val Leu Glu Gly Leu  
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Asn Val Leu Val Thr Ile Ser Gly Lys Lys Asp Lys Leu Arg Val Tyr  
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Tyr Leu Ser Trp Leu Arg Asn Lys Ile Leu His Asn Asp Pro Glu Val  
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Glu Lys Lys Gln Gly Trp Thr Thr Val Gly Asp Leu Glu Gly Cys  
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Val His Tyr Lys Val Val Lys Tyr Glu Arg Ile Lys Phe Leu Val  
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Ile Ala Leu Lys Ser Ser Val Glu Val Tyr Ala Trp Ala Pro Lys  
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Pro Tyr His Lys Phe Met Ala Phe Lys Ser Phe Gly Glu Leu Val  
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His Lys Pro Leu Leu Val Asp Leu Thr Val Glu Glu Gly Gln Arg  
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Leu Lys Val Ile Tyr Gly Ser Cys Ala Gly Phe His Ala Val Asp  
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Val Asp Ser Gly Ser Val Tyr Asp Ile Tyr Leu Pro Thr His Ile  
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Gln Cys Ser Ile Lys Pro His Ala Ile Ile Ile Leu Pro Asn Thr  
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Asp Gly Met Glu Leu Leu Val Cys Tyr Glu Asp Glu Gly Val Tyr  
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Met Gly Trp Gly Glu Lys Ala Ile Glu Ile Arg Ser Val Glu Thr  
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Lys Phe Leu Cys Glu Arg Asn Asp Lys Val Phe Phe Ala Ser Val  
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Pro Glu Asp Ser Trp Leu Lys Phe Arg Ser Glu Asn Asn Cys Phe Leu  
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Tyr Gly Val Phe Asn Gly Tyr Asp Gly Asn Arg Val Thr Asn Phe Val  
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His Ala Glu Ala Asp Val Arg Arg Val Leu Leu Gln Ala Phe Asp Val  
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Val Glu Arg Ser Phe Leu Glu Ser Ile Asp Asp Ala Leu Ala Glu Lys  
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Ala Ser Leu Gln Ser Gln Leu Pro Glu Gly Val Pro Gln His Gln Leu  
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Pro Pro Gln Tyr Gln Lys Ile Leu Glu Arg Leu Lys Thr Leu Glu Arg  
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Glu Ile Ser Gly Gly Ala Met Ala Val Val Ala Val Leu Leu Asn Asn  
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Lys Leu Tyr Val Ala Asn Val Gly Thr Asn Arg Ala Leu Leu Cys Lys  
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Ser Thr Val Asp Gly Leu Gln Val Thr Gln Leu Asn Val Asp His Thr  
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Thr Glu Asn Glu Asp Glu Leu Phe Arg Leu Ser Gln Leu Gly Leu Asp  
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Ala Gly Lys Ile Lys Gln Val Gly Ile Ile Cys Gly Gln Glu Ser Thr  
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Arg Arg Ile Gly Asp Tyr Lys Val Lys Tyr Gly Tyr Thr Asp Ile Asp  
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Leu Leu Ser Ala Ala Lys Ser Lys Pro Ile Ile Ala Glu Pro Glu Ile  
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His Gly Ala Gln Pro Leu Asp Gly Val Thr Gly Phe Leu Val Leu Met  
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Ser Glu Gly Leu Tyr Lys Ala Leu Glu Ala Ala His Gly Pro Gly Gln  
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Ala Asn Gln Glu Ile Ala Ala Met Ile Asp Thr Glu Phe Ala Lys Gln  
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Thr Ser Leu Asp Ala Val Ala Gln Ala Val Val Asp Arg Val Lys Arg  
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Pro Arg His Glu Asp Met Thr Leu Leu Val Arg Asn Phe Gly Tyr Pro  
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Leu Gly Glu Met Ser Gln Pro Thr Pro Ser Pro Ala Pro Ala Ala Gly  
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Gly Arg Val Tyr Pro Val Ser Val Pro Tyr Ser Ser Ala Gln Ser Thr  
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Ser Lys Thr Ser Val Thr Leu Ser Leu Val Met Pro Ser Gln Gly Gln  
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Met Val Asn Gly Ala His Ser Ala Ser Thr Leu Asp Glu Ala Thr Pro  
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Thr Leu Thr Asn Gln Ser Pro Thr Leu Thr Leu Gln Ser Thr Asn Thr  
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His Thr Gln Ser Ser Ser Ser Ser Ser Asp Gly Gly Leu Phe Arg Ser  
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Arg Pro Ala His Ser Leu Pro Pro Gly Glu Asp Gly Arg Val Glu Pro  
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Glu Arg Asn Val Ala Ile Lys Lys Leu Ser Arg Pro Phe Gln Asn Gln  
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Thr His Ala Lys Arg Ala Tyr Arg Glu Leu Val Leu Met Lys Cys Val  
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Asn His Lys Asn Ile Ile Gly Leu Leu Asn Val Phe Thr Pro Gln Lys  
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Ser Tyr Leu Leu Tyr Gln Met Leu Cys Gly Ile Lys His Leu His Ser  
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Ala Pro Glu Val Ile Leu Gly Met Gly Tyr Lys Glu Asn Val Asp Leu  
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Phe Pro Gly Arg Asp Tyr Ile Asp Gln Trp Asn Lys Val Ile Glu Gln  
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Lys Leu Phe Pro Asp Val Leu Phe Pro Ala Asp Ser Glu His Asn Lys  
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Asp Ala Ser Lys Arg Ile Ser Val Asp Glu Ala Leu Gln His Pro Tyr  
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Ile Asn Val Trp Tyr Asp Pro Ser Glu Ala Glu Ala Pro Pro Pro Lys  
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